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ABSTRACT

The "cognitive clarity theory of reading" represents a resolution of the controversies about the relation between speech, writing, and reading. The work of M.A.K. Halliday suggests that learning to read and write is a natural extension of the "mathetic" speech functions, which consist of speech related to children's attempts to understand themselves and the world. These mathetic functions seem to be the foundation of I.G. Mattingly's concept of "linguistic awareness." The mathetic functions of language and linguistic awareness were the psycholinguistic foundations for the thinking that led to the invention of writing, which rests on both functional and featural concepts. Learning to read involves comprehension of the intended significance of the symbols that code an author's communication. M.D. Vernon's research has pointed to cognitive confusion as the fundamental characteristic of reading failure; other research has shown that a state of cognitive confusion about reading is normal for most beginning readers and has indicated that teachers should be more concerned about the development of metalinguistic concepts than about visual perception. These studies have led to the proposal of the cognitive clarity theory of reading, which may be summarized in eight postulates concerning written language, the process of learning to read, and children's initial cognitive confusion and increasing development of cognitive clarity about language. (GT)

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THE PSYCHOLINGUISTIC BASIS OF COGNITIVE CLARITY

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In the silent reading of mass literacy, writing or print can be said to be visible language. This visible language has developed features that are rather different from those of spoken language. These differences have led to theoretical controversy about the relations between speech and writing, and to dissension among reading methods experts as to whether or not children should be taught about language as part of reading instruction. This paper proposes a theoretical resolution of these conflicts.

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Mathetic Functions of Speech

Halliday (1975) has described how the very beginnings of spoken language come from the child's problem solving behavior to serve evolving needs and developmental tasks. The child learns the language of the community as a by-product of striving for these other goals. Grammar is not learned by some mysterious instinctive process, as Chomsky seems to believe. Grammar, in Halliday's view, is acquired because it is a functional necessity for the child. Grammar increases the child's scope for communication in controlling the environment.

But, according to Halliday, there are two functions of speech -- "pragmatic" and "mathetic". The pragmatic functions are the intrusive, interactive and manipulative aspects of speech. The mathetic functions consist in declarative and observational utterances that occur when the child attempts to understand the self and the surrounding world. These mathetic functions lead the child to become aware of language itself.

Halliday's "mathetic functions" would seem to be the foundation of what Mattingly calls "linguistic awareness". Mattingly (1972) writes that reading is "a deliberately acquired, language-based skill, dependent upon the speaker-hearer's awareness of certain aspects of primary linguistic activity" (p. 145). The aspects that Mattingly refers to are indicated by another quotation: "By virtue of this awareness, he has an internal image of the utterance, and this image probably owes more to the phonological level than to any other level" (p. 140).

Thus reading is an extension of speech, though, as Mattingly

makes clear, reading is not a parallel activity to listening. In Halliday's terms, literacy extends the scope of the pragmatic functions of speech and learning how to read and write are a natural extension of the mathetic functions as children increase their own awareness and understanding of the functions and features of language.

The Invention of Writing

The mathetic functions of language and linguistic awareness were the psycholinguistic foundations for the creative thinking that led to the inventions of writing that occurred independently in various cultures. The philologists Gelb (1963) and Jensen (1970) have traced the prehistory and history of the creation of the alternative methods of writing language and it is clear that the inventors and developers of visible signs for language did so on the basis of two sets of ideas. Firstly, they had ideas about the purposes of spoken language. They developed concepts of communication. They then took the leap forward of realizing that the auditory symbols of speech could be translated into visible signs. When this idea was grasped a second set of ideas developed. A way had to be found to analyse speech so that it could be represented by visible signs in an economic code. Different people had different ideas about how to analyse speech. Thus today there exist many different ways to write language. Nevertheless, despite this great variety of writing systems, all visible language rests on these two basic kinds of concepts discovered by the originators of writing:

(1) Functional concepts: the communication purposes of writing.

(2) Featural concepts: the features of spoken language that were to be represented by written signs.

The Learning-to-read Process

Reading normally is the skill of interpreting visible symbols to find out the meaning intended by the author who wrote them. Learning to read involves more than interpreting the author's intentions. The beginner must, in addition, comprehend the intended significance of the symbols that code the author's communication.

Actually this task of the reading novice is not different from the learner's problem in acquiring other types of skill. Fitts (1962) found that all skills pass through an initial cognitive phase in which the beginner tries to comprehend what he must do and why. Bruner (1971) describes how this understanding of the task functions in improving a skill: "There is a very crucial matter about acquiring a skill -- be it chess, political savvy, biology, or skiing. The goal must be plain; one must have a sense of where one is trying to get to in any given instance of activity. For the exercise of skill is governed by an intention and feedback on the relation between what one has intended and what one has achieved thus far -- 'Knowledge or results'. Without it, the generativeness of skilled operations is lost" (pp. 113-114).

Vernon (1971) has applied the psychology of skill acquisition to reading instruction itself. She writes (in regard to English): "It would seem that in learning to read it is essential for the child to realize and understand the fundamental generalization that in alphabetic

writing all words are represented by combinations of a limited number of visual symbols. Thus it is possible to present a very large vocabulary of spoken words in an economical manner which requires the memorizing of a comparatively small number of printed symbols and their associated sounds. But a thorough grasp of this principle necessitates a fairly advanced stage of conceptual reasoning, since this type of organization differs fundamentally from any previously encountered by children in their normal environment" (p. 79, italics added). Vernon specifically rejects simple associationistic views of learning to decode. She states: "The employment of reasoning is almost certainly involved in understanding the variable associations between printed and sounded letters. It might appear that certain writers suppose that these associations may be acquired through rote learning. But even if this is possible with very simple letter-phoneme associations, the more complex associations and the correct application of the rules of spelling necessitate intelligent comprehension" (p. 82, italics added).

In another book, her survey of research on reading failure led Vernon (1957) to conclude that "the fundamental and basic characteristic of reading disability appears to be cognitive confusion..." (p. 71) and that "the fundamental trouble appears to be a failure in development of this reasoning process" (p. 48).

If cognitive confusion is the fundamental characteristic of reading failure, then the fundamental characteristic of reading success would seem to be cognitive clarity. What exactly must children be cognitively clear about in learning to read? What do they need to

understand in reasoning about the tasks they must undertake in reading instruction?

Reid's (1966) research discovered that young children's conceptions of reading and writing were very different from those of adults. Her Scottish five-year-olds showed a "general lack of any specific expectancies of what reading was going to be like, of what the activity consisted in, of the purpose and use of it." They also had "a great poverty of linguistic equipment to deal with the new experiences, calling letters 'numbers' and words 'names'," and so on (p. 58). That Reid's findings were not limited to the twelve Edinburgh pupils that she interviewed has been shown by subsequent studies in several other countries, for example, those of Turnbull (1970) in Australia, Downing and Oliver (1973-74) and Downing, Ollila and Oliver (1975, 1977) in Canada, Downing (1970, 1971-72), Francis (1973) and Hall (1976) in England, Clay (1972) in New Zealand, Lundberg and Tornéus (1978) in Sweden, and Evans (1974), Evans, Taylor and Blum (1977), Holden and MacGinitie (1972), Johns (1977), Kingston, Weaver and Figa (1972), Meltzer and Herse (1969) and Papandropoulou and Sinclair (1974) in the United States. From these studies it seems clear that it is normal for most beginners to enter the task of learning to read in a state of cognitive confusion about the characteristics and purposes of reading activities.

The author and his colleagues (Downing, Ayers, and Schaefer, 1978) recently completed a study in which a structured interview was conducted individually with 310 Canadian kindergarten children selected as a representative sample of pupils in their community. The interview

had four parts: I Recognition of acts of reading and writing; II Concepts of the purposes of reading and writing; III Concepts of features of printed materials; IV Visual perception (similar to one part of the Frostig Test). Most children achieved near perfect scores on Part IV. Part I was slightly more difficult. Part II was considerably more difficult and Part III was the most difficult of all. It was concluded that teachers should be more concerned about the development of these metalinguistic concepts than visual perception.

The Cognitive Clarity Theory

Reading is a skill and, as Bruner has pointed out, practice in learning any skill requires that the learner understands its objectives. These objectives remain the same today as they were hundreds or even thousands of years ago. The literacy learner has to understand the intentions of writers. Why do they make those visible symbols? The answer has two parts: (1) they intend to communicate some meaning; (2) they intend to code certain features of speech. In other words, beginners have to rediscover those same basic functional and featural concepts that led to the invention of the writing system used in their language.

All the work that has been very briefly reviewed in this paper is reported in detail in Reading and Reasoning (Downing, 1979). These studies have led to the proposal of the "cognitive clarity theory of reading," which is summarized in that book briefly in eight postulates: "(1) Writing or print in any language is a visible code for those aspects of speech that were accessible to the linguistic

awareness of the creators of that code or writing system; (2) this linguistic awareness of the creators of a writing system included simultaneous awareness of the communicative function of language and certain features of spoken language that are accessible to the speaker-hearer for logical analysis; (3) the learning-to-read process consists in the rediscovery of (a) the functions and (b) the coding rules of the writing system; (4) their rediscovery depends on the learner's linguistic awareness of the same features of communication and language as were accessible to the creators of the writing system; (5) children approach the tasks of reading instruction in a normal state of cognitive confusion about the purposes and technical features of language; (6) under reasonably good conditions, children work themselves out of the initial state of cognitive confusion into increasing cognitive clarity about the functions and features of language; (7) although the initial stage of literacy acquisition is the most vital one, cognitive confusion continues to arise and then, in turn, give way to cognitive clarity throughout the later stages of education as new subskills are added to the student's repertory; (8) the cognitive clarity theory applies to all languages and writing systems. The communication aspect is universal, but the technical coding rules differ from one language to another" (pp. 53-54).

References

Bruner, J.S. The relevance of education. London: Allen & Unwin, 1971.

Clay, M.M. Reading: the patterning of complex behaviour. Auckland, New Zealand: Heinemann, 1972.

Downing, J. Children's concepts of language in learning to read. Educational Research, 1970, 12, 106-112.

Downing, J. Children's developing concepts of spoken and written language. Journal of Reading Behavior, 1971-72, 4, 1-19.

Downing, J. Reading and reasoning. Edinburgh: Chambers, 1979.

Downing, J., Ayers, D., & Schaefer, B. Conceptual and perceptual factors in learning to read. Educational Research, 1978 (in press).

Downing, J., & Oliver, P. The child's concept of a word. Reading Research Quarterly, 1973-74, 9, 568-582.

Downing, J., Ollila L., & Oliver, P. Cultural differences in children's concepts of reading and writing. British Journal of Educational Psychology, 1975, 45, 312-316.

Downing, J., Ollila, L., & Oliver, P. Concepts of language in children from differing socio-economic backgrounds. Journal of Educational Research, 1977, 70, 277-281.

Evans, M. Children's ability to segment sentences into individual words. Paper presented at the annual meeting of NRC, Kansas City, Missouri, 1974.

Evans, M., Taylor, N., & Blum, I. Children's written language awareness and its relation to reading acquisition (unpublished paper). Washington, D.C.: Catholic University of America, 1977.

Fitts, P. Factors in complex skill training. In R. Glaser (Ed.), Training research and education. Pittsburgh: University of Pittsburgh Press, 1962.

Francis, H. Children's experience of reading and notions of units in language. British Journal of Educational Psychology, 1973, 43, 17-23.

Gelb, I.J. A study of writing. Chicago: University of Chicago Press, 1963.

Hall, N.A. Children's awareness of segmentation in speech and print. Reading, 1976, 10, 11-19.

Halliday, M.A.K. Learning how to mean. London: Edward Arnold, 1975.

Holden, M.H. & MacGinitie, W.H. Children's conceptions of word boundaries in speech and print. Journal of Educational Psychology, 1972, 63, 551-557.

Jensen, H. Sign, symbol and script: an account of man's effort to write. London: Allen & Unwin, 1970.

Johns, J.L. Children's conceptions of a spoken word: a developmental study. Reading World, 1977, 16, 248-257.

Kingston, A.J., Weaver, W.W., & Figa, L.E. Experiments in children's perception of words and word boundaries. In F.P. Greene (Ed.), Investigations Relating to Mature Reading. Milwaukee, Wisconsin: NRC, 1972.

Lundberg, I., & Tornéus, M. Nonreaders' awareness of the basic relationship between spoken and written words. Journal of Experimental Child Psychology, 1978, 25, 404-412.

Mattingly, I.G. Reading, the linguistic process, and linguistic awareness. In J.F. Kavanagh & I.G. Mattingly (Eds.), Language by Ear and by Eye. Cambridge, Mass.: MIT Press, 1972.

Meltzer, N.S., & Herse, R. The boundaries of written words as seen by first graders. Journal of Reading Behavior, 1969, 1, 3-14.

Papandropoulou, J., & Sinclair, H. What is a word? Experimental study of children's ideas on grammar. Human Development, 1974, 17, 241-258.

Reid, J.F. Learning to think about reading. Educational Research, 1966, 9, 56-62.

Turnbull, K. Children's thinking: when is a letter a number? Curriculum and Research Bulletin (Victoria, Australia), pp. 126-131.

Vernon, M.D. Backwardness in reading. London: Cambridge University Press, 1957.

Vernon, M.D. Reading and its difficulties. London: Cambridge University Press, 1971.